

# Local Climatological Data

Annual Summary With Comparative Data

1978



## TUCSON, ARIZONA

### Narrative Climatological Summary

Within 10 to 15 miles of the station the terrain is flat or gently rolling, with many dry washes. There is a general increase in elevation from north and northwest to south and southeast. Rugged mountain ranges and jutting hills encircle the valley floor. The higher mountains to the north, east, and south reach up to over 5,000 feet above the airport, and are at distances of 25 to 40 miles. To the west, the hills and smaller mountains range from 500 to 4,000 feet above the airport; all are more than 5 miles distant.

The soil cover is rather sandy, and native vegetation is mostly brush, cacti, and small trees, typical of the low latitude desert climate. The metropolitan area of Tucson lies at the foot of the Catalina Mountains, to the north of the airport. As a result of the lower elevation and more protected location of the City, recorded maximum temperatures are usually higher there than at the airport and minimum temperatures are correspondingly lower than at the airport.

As might be expected from its geographical situation, the climate of Tucson is prominently characterized by a long, hot season, beginning in April and ending in October. Maximum temperatures above 90° are the rule from May through September. Occurrences of temperatures of 100° or higher averaged 41 days annually for the 25-year period 1951-75, but these extreme temperatures are not as uncomfortable as they might seem since they are associated with low relative humidity. June and July averaged 14 days each with 100° or higher readings. Under usual conditions, the diurnal temperature range is large, averaging almost 30°, although it may exceed 40°. Clear skies or very thin high clouds permit intense surface heating during the day and active radiational cooling at night, a process enhanced by the characteristic atmospheric dryness. The average growing season in the Tucson area approximates 250 days.

The distribution of precipitation through the year is such that more than 50 percent of the annual amount usually falls between July 1 and September 15 and a secondary maximum from December through March provides over 20 percent of the yearly precipitation. During the July-September period scattered convective or orographic showers and thunderstorms occur that often fill dry washes to overflowing. On occasion, brief, torrential downpours cause spectacular and destructive flash floods in sections of the metropolitan area, sometimes from short-period falls of over 1.50 inches. Hail rarely falls in thunderstorms, and sleet is an almost unknown form of precipitation. The December through March precipitation is more general and occurs as prolonged rainstorms that provide much needed replenishment of ground water. During these storms, snow often falls on the higher mountains, but snow in Tucson itself is infrequent, particularly in accumulations exceeding an inch in depth.

Relative humidity shows a pronounced daily oscillation in line with the usual large daily range in temperature. From near the first of the year, the average relative humidity decreases steadily until July and the beginning of the thunderstorm season, when it shows a marked increase. By the middle of September, and end of the thunderstorm season, it decreases again, resuming the upward climb in late November. Only occasionally during the summer is relative humidity high enough to produce appreciable physical discomfort, and then only for short periods. During the hot season, relative humidity values may fall below 10 percent during afternoons, and sometimes below 5 percent. The low average wet bulb temperature during hot weather makes evaporative air coolers effective most of the time.

Tucson lies in the zone receiving more sunshine than any other section of the United States; the persistence of the bright sunshine is one of the most noteworthy features of this desert climate. Cloudless days are commonplace, and average cloudiness, much of it being very thin cirriform clouds, is low.

Surface winds are generally light, with no important seasonal changes in either velocities or prevailing direction. Occasional windstorms cause localized duststorms, particularly in the outlying sections of Tucson where the ground has been disturbed in numerous development areas. During the spring months, winds may briefly be strong enough to cause some damage to trees and buildings. Wind velocities and directions are influenced to an important extent by the surrounding mountains, as well as by the general slope of the terrain. With weak pressure gradients, local winds tend to be in the SE quadrant during the night and early morning hours, veering to NW during the day. Highest velocities usually occur with winds from the SW and E to S.

While dust and haze of local origin are frequently visible, their effect on the general clarity of the atmosphere is not great. Visibility values are normally high; and fog is extremely rare.

# Meteorological Data For The Current Year

Station: TUCSON, ARIZONA  
# 23160

INTERNATIONAL AIRPORT

Standard time used:

MOUNTAIN

Latitude: 32° 07' N Longitude: 110° 56' W

Elevation (ground): 2584 feet

Year: 1978

Month	Temperature °F						Degree days Base 65 °F	Precipitation in inches				Relative humidity, pct.				Wind				Pct. of possible sunshine	Number of days						Average station pressure mb											
	Averages			Extremes				Water equivalent		Snow, Ice pellets		Resultant		Fastest mile		Sunrise to sunset		Temperature °F		Maximum		Minimum																
	Daily maximum	Daily minimum	Monthly	Highest	Date	Lowest	Heating	Cooling	Total	Greatest in 24 hrs.	Date	Total	Greatest in 24 hrs.	Date	Direction	Speed m.p.h.	Average speed m.p.h.	Direction	Speed m.p.h.	Direction	Speed m.p.h.	90° and above	32° and below	0° and below	32° and below	0° and below												
JAN	63.6	42.5	53.1	74	29	29	365	0	2.05	0.90	15-16	0.0	0.0	75	55	45	74	16	1.8	6.0	33	NW	10	6.4	9	7	15	8	0	0	1	0	927.9					
FFB	64.6	42.5	53.6	77	23	29	313	0	1.75	0.82	10-11	0.0	0.0	71	48	36	63	17	2.4	8.2	33	SF	5	4.9	10	11	7	10	0	0	0	4	0	926.5				
MAR	73.8	49.8	61.8	87	31	39	14	144	54	0.89	0.41	12	0.0	0.0	66	39	31	57	19	2.7	8.3	28	SE	16	5.5	10	8	13	6	0	0	0	0	0	926.2			
APR	80.2	50.1	65.2	91	25	37	10	64	76	0.01	0.01	8	0.0	0.0	44	21	17	31	22	3.5	8.8	34	SW	8	9.6	3.3	17	8	5	5	1	0	0	923.8				
MAY	88.4	57.8	72.1	103	13	48	7	24	283	0.61	0.48	6	0.0	0.0	39	20	16	30	23	3.1	8.9	34	SW	5	94	2.6	21	5	5	5	1	0	0	0	922.1			
JUN	101.1	69.7	85.8	108	24	59	5	0	630	0.22	0.18	27-28	0.0	0.0	31	16	14	22	25	2.8	8.5	33	SE	27	97	1.6	24	4	2	2	0	0	0	0	924.1			
JUL	101.0	75.1	88.1	108	19	67	.1	0	721	0.78	0.28	30-31	0.0	0.0	49	27	23	40	20	2.1	9.1	38	SE	8	88	4.8	10	13	8	10	0	0	0	0	0	924.1		
AUG	96.6	72.8	84.7	101	26	68	15	0	616	1.59	0.64	10-11	0.0	0.0	58	32	28	47	16	2.6	8.3	40	S	1	92	3.3	15	14	2	11	0	0	0	0	0	925.5		
SFP	92.4	69.4	80.9	98	30	55	20	0	483	1.66	1.10	21	0.0	0.0	50	32	25	41	15	4.5	9.6	34	SE	21	95	2.2	23	6	1	5	0	0	0	0	0	923.8		
UCT	85.8	61.7	73.8	95	13	49	27	15	293	1.86	1.73	20-21	0.0	0.0	50	32	25	42	14	3.5	8.2	27	SE	24	88	4.0	17	7	7	5	0	0	0	0	0	926.2		
NNV	69.3	47.7	58.5	65	2	37	16	213	28	1.58	0.80	23-24	0.0	0.0	67	47	40	63	19	7.3	9.5	35	SW	11	74	4.0	17	5	8	7	0	0	0	0	0	926.5		
DFC	60.6	38.7	49.7	76	1	20	8	470	0	2.73	1.07	30	T	T	6-7	56	66	48	41	64	16	3.3	8.4	30	SW	6	70	4.9	13	7	11	8	0	0	0	0	0	927.2
YFAR	81.5	56.5	69.0	108	19	20	8	1608	3184	15.73	1.73	20-21	T	T	6-7	56	35	28	48	18	2.5	8.3	40	S	1	88	4.0	186	95	84	75	0	39	1	150	0	0	925.3

## Normals, Means, And Extremes

Month	Temperatures °F						Normal Degree days Base 65 °F	Precipitation in inches				Relative humidity pct.				Wind				Pct. of possible sunshine	Mean number of days						Average station pressure mb															
	Normal			Extremes				Water equivalent		Snow, Ice pellets		Resultant		Fastest mile		Sunrise to sunset		Temperature °F		Maximum		Minimum																				
	Daily maximum	Daily minimum	Monthly	Record highest	Year	Record lowest	Heating	Cooling	Normal	Maximum monthly	Year	Minimum monthly	Year	Maximum in 24 hrs.	Year	Maximum monthly	Year	Mean speed m.p.h.	Prevailing direction	Speed m.p.h.	Direction	Year	Mean sky cover, tenths, sunrise to sunset	Clear	Partly cloudy	Cloudy	Thunderstorms	Heavy fog, visibility % mile or less	90° and above	32° and below	0° and below	32° and below	0° and below									
(a)	38	38	38	67	1953	16	1949	442	0	0.77	2.37	1953	T	1970	4.7	1946	3.5	1949	62	40	32	56	7.8	SE	80	E	1962	81	4.6	14	7	10	4	* * *	0	0	927.7					
J	63.3	38.2	50.9	67	1953	16	1949	233	11	0.70	2.27	1941	1.40	1965	3.9	1965	3.9	1965	38	34	26	49	8.1	SE	99	E	1952	84	4.3	13	7	8	4	* * *	0	0	927.3					
F	67.0	39.9	53.5	62	1957	20	1945	243	13	0.64	2.26	1952	0.00	1950	1.49	1952	5.7	1964	57	1964	32	29	23	42	8.5	SE	61	SE	1955	86	4.4	15	7	9	4	* * *	0	0	924.5			
M	71.5	43.6	57.6	92	1950	20	1945	1945	81	0.64	1.07	1951	0.00	1950	0.73	1952	2.0	1976	42	1976	42	21	16	31	8.8	SE	66	SE	1952	91	3.3	17	8	5	3	* * *	0	0	924.9			
A	80.7	50.3	82.5	102	1945	27	1945	272	0	0.14	0.89	1943	0.00	1974	0.69	1943	0.0	1943	0.0	1943	33	17	13	24	8.6	SE	42	NE	1965	93	2.7	21	6	4	1	0	0	0	0	922.7		
M	89.6	57.5	73.6	107	1938	38	1950	0	272	0.14	0.89	1943	0.00	1975	0.69	1943	0.0	1943	0.0	1943	33	17	13	24	8.6	SE	42	NE	1965	93	2.7	21	6	4	1	0	0	0	0	922.7		
J	97.9	66.2	82.1	111	1970	47	1955	0	513	0.20	1.46	1954	0.00	1975	1.27	1954	0.0	1954	0.0	1954	38	17	13	24	8.9	SSE	50	SE	1961	93	2.1	22	6	2	0	0	0	0	0	922.7		
J	98.3	74.2	86.3	111	1958	63	1973	0	660	2.38	5.20	1958	0.27	1947	3.93	1958	0.0	1947	0.0	1947	58	33	28	47	8.2	SE	71	SE	1971	78	5.3	10	12	9	10	0	0	0	0	0	924.5	
A	95.3	72.3	83.8	109	1944	61	1956	0	582	2.34	7.93	1955	0.23	1946	2.48	1961	0.0	1946	0.0	1946	65	38	32	53	7.7	SE	94	SE	1969	82	4.5	13	12	6	9	4	0	0	0	0	0	924.6
S	65.1	67.1	80.1	80	1970	24	1958	221	26	0.36	4.53	1.37	5.11	1964	0.00	1953	3.05	1964	0.0	1964	55	32	27	44	8.2	SE	84	SE	1960	87	2.8	20	6	4	5	0	0	0	0	0	924.3	
O	83.8	56.4	70.1	101	1955	26	1971	29	187	0.66	4.51	1972	0.00	1973	1.86	1972	T	1959	52	30	25	63	8.2	SE	67	SE	1948	89	2.8	20	7	4	3	0	0	0	0	0	925.9			
N	72.2	44.8	58.5	90	1947	24	1958	221	26	0.36	1.90	1.92	0.00	1950	1.86	1948	6.6	1948	0.0	1948	54	32	28	46	8.0	SE	44	SE	1951	85	3.6	18	6	6	3	* * *	0	0	0	0	0	927.0
D	64.9	39.1	52.0	84	1954	16	1974	403	0	0.94	3.02	1962	0.00	1973	1.54	1967	6.8	1971	6.8	1971	51	30	25	49	8.2	SE	71	SE	1971	86	3.7	198	90	51	1	40	1	139	0	0	927.8	
YR	81.5	54.1	67.8																																							

## Average Temperature

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
1939	50.4	45.4	50.4	67.2	74.0	82.6	87.2	84.6	79.4	67.4	62.8	56.2	68.0
#1940	52.4	52.8	50.4	65.4	76.0	83.4	87.2	84.4	80.8	70.7	56.8	56.5	68.9
1941	52.6	56.5	55.0	59.6	72.9	80.4	86.6	83.2	79.4	67.2	60.6	52.0	67.3
1942	52.6	50.4	53.8	61.8	73.1	82.9	89.6	85.2	81.6	69.4	63.2	54.2	68.5
1943	52.6	58.7	61.0	70.4	76.2	83.4	88.0	83.9	82.0	70.6	61.0	52.5	70.2
1944	50.4	50.7	56.4	63.0	73.0	80.6	87.4	86.4	79.6	72.8	55.9	52.3	67.4
1945	50.7	53.6	54.0	63.4	73.4	78.6	86.1	84.2	80.8	71.6	58.5	50.4	67.2
1946	48.0	52.7	50.4	59.6	70.6	73.0	85.4	85.0	84.0	80.9	65.9	54.6	55.6
1947	48.4	57.8	59.6	64.8	75.6	82.1	86.8	83.7	83.3	70.4	54.2	48.2	68.1
#1948	51.3	50.8	54.0	68.0	75.1	82.4	86.6	85.2	82.0	71.2	53.6	51.2	67.8
1949	49.0	50.2	57.6	67.4	73.4	83.0	85.0	84.2	82.2	66.4	54.3	50.8	67.3
1950	50.4	57.2	60.7	69.2	71.8	81.6	86.8	84.7	78.1	76.8	63.0	56.9	69.4
1951	50.3	53.7	57.4	64.4	74.0	80.5	88.6	84.9	83.2	72.5	58.5	51.5	68.3
1952	51.7	51.6	52.7	65.1	76.8	83.4	85.0	84.6	83.2	72.5	58.5	51.5	68.3
1953	53.9	52.2	60.6	65.2	68.9	84.1	86.8	86.4	82.2	71.0	61.6	40.6	68.5
1954	53.5	60.3	59.3	71.5	75.9	82.1	86.6	83.4	82.2	74.2	62.7	53.3	70.6
1955	46.7	48.6	59.6	64.4	71.8	82.3	86.4	81.8	81.2	74.3	58.5	55.5	67.4
1956	56.1	48.7	60.2	66.2	75.8	86.2	85.4	84.0	83.2	70.2	57.8	52.5	68.8
1957	53.8	61.1	59.6	66.2	71.2	80.3	88.1	84.2	81.3	75.4	54.2	50.9	69.0
1958	51.4	55.8	54.2	66.5	79.1	84.9	86.9	84.3	80.5	71.9	57.8	55.6	66.9
1959	53.8	51.9	58.2	65.2	72.5	83.4	86.4	81.2	80.2	69.7	58.8	51.4	68.2
1960	46.8	47.8	61.0	65.7	71.9	83.5	86.0	84.2	81.2	67.3	59.2	49.1	67.0
1961	52.5	53.0	58.2	66.2	72.9	84.7	86.1	81.6	77.1	68.5	54.6	50.5	67.1
1962	49.0	54.7	53.3	70.1	71.7	80.3	84.9	87.0	81.3	70.6	61.5	54.0	68.2
1963	48.3	57.5	57.7	64.0	77.3	80.5	87.6	82.3	82.4	73.2	59.3	52.7	68.6
1964	47.5	47.1	54.8	63.2	73.2	80.2	86.2	81.6	76.3	72.1	55.2	52.4	66.0
1965	53.6	51.1	55.1	64.5	70.1	77.6	85.0	84.0	76.8	71.9	62.6	52.1	67.1
1966	47.7	47.6	60.1	66.8	76.1	82.8	85.3	82.9	78.3	68.1	61.1	52.4	67.6
1967	51.4	55.4	62.1	62.1	71.9	80.7	85.4	84.6	80.7	71.6	62.9	48.6	68.1
1968	52.4	59.1	58.7	63.2	73.3	83.5	84.9	81.3	80.7	71.7	58.3	50.6	68.1
1969	55.5	55.1	54.9	66.6	74.9	80.7	85.1	86.3	81.2	66.8	58.6	52.4	68.0
1970	50.0	57.0	55.9	61.1	75.2	82.4	87.2	84.8	76.4	65.1	60.1	51.8	67.3
1971	50.5	52.3	59.8	62.0	69.3	81.2	87.5	81.3	79.1	64.1	56.8	47.1	66.0
1972	50.4	55.9	65.0	72.2	81.2	82.9	86.2	82.9	78.6	66.5	53.0	49.0	67.3
1973	47.6	53.4	51.6	59.7	73.0	81.1	84.3	84.7	79.6	70.7	58.4	52.3	66.4
1974	50.2	51.9	60.1	66.1	74.3	85.5	83.5	83.0	73.9	69.1	57.5	47.0	67.3
1975	49.8	50.0	55.3	57.9	69.6	80.8	84.2	85.6	80.0	69.5	59.3	53.0	66.3
1976	52.6	58.4	58.2	66.8	74.5	83.4	83.9	85.5	77.7	67.8	60.0	52.2	68.3
1977	50.7	56.9	55.7	67.0	70.6	84.6	87.0	85.6	82.0	73.9	61.7	56.9	69.4
RECORD	50.3	53.2	57.7	64.5	72.6	82.5	86.0	84.0	80.0	69.5	58.2	51.2	67.4
MEAN	64.4	67.0	72.9	80.7	89.4	98.5	97.0	96.0	94.0	84.9	73.2	65.2	82.2
MAX	36.2	38.7	42.5	48.2	53.7	65.2	72.9	71.2	65.9	54.0	43.2	37.2	52.6
MIN													

## Heating Degree Days

Season	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	Total
#1958-59	0	0	0	27	215	284	340	370	205	8	10	0	1459
1959-60	0	0	0	45	189	416	556	493	136	68	5	0	1904
1960-61	0	0	0	37	183	486	381	331	206	41	9	0	1474
1961-62	0	0	0	61	312	444	491	285	357	5	7	0	1673
1962-63	0	0	0	13	137	336	515	215	234	79	0	0	1529
1963-64	0	0	0	7	186	372	533	497	321	107	27	0	2045
1964-65	0	0	0	5	293	383	348	383	305	114	21	0	1452
1965-66	0	0	0	33	110	394	532	473	166	26	0	0	1744
1966-67	0	0	0	120	24	386	416	256	113	20	0	0	1452
1967-68	0	0	0	14	89	502	384	170	200	91	0	0	1450
1968-69	0	0	0	4	204	440	288	328	339	34	35	0	1672
1969-70	0	0	0	55	188	384	455	224	274	132	8	0	1720
1970-71	0	0	0	58	143	403	445	350	200	111	12	0	1722
1971-72	0	0	0	120	249	549	444	259	73	50	0	0	1743
1972-73	0	0	0	96	398	489	533	320	410	174	19	0	2399
1973-74	0	0	0	23	216	390	451	362	151	49	5	0	1657
1974-75	0	0	0	53	218	552	495	393	299	217	29	0	2224
1975-76	0	0	0	38	191	365	378	180	221	88	5	0	1466
1976-77	0	0	0	45	178	390	435	221	287	65	9	0	1630
1977-78	0	0	0	1	117	242	365	313	144	64	24	0	1270
1978-79	0	0	0	15	213	470							

## Cooling Degree Days

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total	
1969	0	0	15	87	348	477	458	689	493	118	68	1	0	2866
1970	0	0	25	333	561	693	620	347						2656
1971	6	0	45	51	152	493	706	514	430	101	12	0	0	2510
1972	0	0	1	82	282	536	678	563	414	150	1	0	0	2713
1973	0	0	0	21	272	495	603	615	445	206	26	2	0	2685
1974	0	0	18	31	664	881	564	387	185					2788
1975	0	0	4	11	184	671	604	651	458	182	27	0	0	2592
1976	2	0	14	89	306	557	597	636	386	139	34	0	0	2760
1977	0	0	5	133	198	597	691	669	517	266	23	0	0	3099
1978	0	0	54	76	283	630	721	615	483	293	28	0	0	3184

## Precipitation

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
1939	0.39	1.60	0.69	0.04	0.00	T	0.61	1.24	1.93	0.18	0.54	0.27	7.05
1940	0.45	1.42	0.04	0.21	0.52	1.19	0.68	3.51	0.0	0.0	0.0	0.0	0.0
1941	1.43	2.27	1.46	1.06	0.74	T	2.51	1.99	1.20	0.53	0.65	2.01	15.85
1942	0.50	1.92	0.28	0.70	0.00	0.00	0.68	0.90	1.78	0.60	1.7	0.47	7.87
1943	0.44	0.39	1.27	0.03	0.89	0.18	1.09	3.04	3.59	0.25	0.00	0.79	11.91
1944	0.36	1.10	1.01</										

# STATION LOCATION

TUCSON, ARIZONA

Location	Occupied from	Occupied to	Airline distance and direction from previous location	Latitude North	Longitude West	Ground at tem- perature site	Elevation above Sea level						Remarks	
							Ground							
<b>COOPERATIVE</b> University of Arizona	10-1891	Present		32° 14'	110° 57'	2391	a40	b5	b5					a - 45 ft. to September, 1894. b - 11 ft. to September, 1894.
<b>AIRPORT</b> Tucson Municipal (Later Davis-Monthan Air Force Base)	1/22/30	10/14/48		32° 11'	110° 55'	2553	c33	g5	g5	f14	d14	e14		Army Signal Service to Nov. 1932. c - Installed 6/17/40. d - Installed 6/17/40 at 3 ft. and moved to roof 7/23/47. e - Unknown to 6/17/40, 5 ft. to 7/23/47. f - Installed 10/1/47. g - Unknown prior to 6/17/40.
Tucson Municipal	10/14/48	10/15/58	4.9 mi. SW	32° 08'	110° 57'	2558	33	5	5	4	5	5		New Airport
Tucson Municipal †	10/15/58	Present	4500 ft. E	32° 07'	110° 56'	2584	20	5	5	5	3	4		† Tucson International Airport effective 3/13/63. Requests for information concerning solar radiation data or instrumen- tation should be made to the Director, National Climatic Center, Federal Building, Asheville, NC 28801.

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I certify that this is an official publication of the National Oceanic and Atmospheric Administration, and is compiled from records on file at the National Climatic Center, Asheville, North Carolina 28801.

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